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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,451	06/20/2001	Thomas L. Ritzdorf	291958170US02	3390
50689	7590	01/10/2008		
PERKINS COIE LLP P.O. BOX 1247 PATENT-SEA SEATTLE, WA 98111-1247			EXAMINER LEADER, WILLIAM T	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 01/10/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

09/885,451

Applicant(s)

RITZDORF ET AL.

Examiner

William T. Leader

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 68-77,80-85,107-115 and 118-130 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 68-77,80-85,107-115 and 118-130 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/ are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. 10/9/07; 2/23/05.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 23, 2007, has been entered.

2. The amendments to independent claims 68, 80, 82, 84, 85 and 118 are considered to overcome the rejections of record under 35 U.S.C. 103 for the reasons given in applicant's Remarks.

### ***Double Patenting***

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761

(CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 68-77, 80-85, 107-115 and 118-130 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-102 of U.S. Patent No. 7,001,471 to Ritzdorf et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because all of the basic process steps recited in the claims of the instant application are claimed in the Ritzdorf et al '471 patent. Claim 20 of the '471 patent recites a process for the electrodeposition of copper on a workpiece which includes a dielectric layer in which sub-micron structures have been formed. A seed layer is formed on the dielectric layer and in the recessed sub-micron structures. A barrier layer may be deposited on the dielectric layer and in the sub-micron structures prior to forming the seed layer (claim 25). The workpiece is contacted with a copper-containing electroplating solution. Electroplating power is applied to the seed layer to electrolytically deposit copper metal to substantially fill the recessed sub-micron structures and to deposit excess copper which extends beyond an exterior surface of the dielectric layer. The

electroplating power is initially applied at a first current for a predetermined first period of time, and a second current which is greater than the first current is applied for a second period of time (claim 27). The electroplated workpiece is subjected to an elevated temperature annealing process comprising establishing a temperature gradient in which the temperature decreases in a direction moving outwardly from the base toward the dielectric layer. While no claim of the present application is identical to any claim of the '471 patent, both sets of claims are drawn to the same series of process steps. No patentable distinction is seen between the two sets of claims.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 119 and 122 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

7. Claim 119 recites that the initial resistivity of the electrolytically deposited copper is approximately 1.725 MOhms-cm, while claim 122 recites that the initial resistivity is greater than approximately 1.9 MOhms-cm. At page 13 of the Remarks, applicant states that the initial resistivity values were calculated directly from the 1.5 micron film thickness set forth in the originally filed specification. Applicant has not explained how a single value of film thickness provides the basis for two different values of resistivity, or where the basis for the “greater than” limitation in claim 122 is found.

8. The expression “MOhms” is interpreted by the Examiner as standing for megohm, or one million ohms. See, for example, column 4, line 38 of patent 4,528,519 to van Driest. Values of 1.725 or 1.9 MOhms-cm as recited in claims 119 and 122, respectively, do not appear to be consistent with accepted values for resistivity. See, for example, column 2, lines 50-52 of patent 7,115,196 to Chen et al and assigned to Semitool, Inc. which indicate that resistivities of copper films are in the range of 1.7 to 2.0  $\mu$ Ohm-cm (microhoms-cm). It is requested that applicant provide detailed derivations of the numerical limitations recited in claims 119 and 122 and indicate where basis is found in the specification as filed for all values used in the derivations.

9. Claim 112 objected to under 37 CFR 1.75 as being a substantial duplicate of claim 74. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 571-272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
William Leader  
December 28, 2007

  
SUSY TSANG-FOSTER  
SUPERVISORY PATENT EXAMINER